works can never be what they were intended, and a slight error in setting out works may sometimes be of fatal consequence; no foreman should be intrusted with this task; and it will be found, even with all possible care, that mistakes will creep in. In setting out the foundations of bridges, care must be taken that piers and abutments are truly equidistant from the centres, and counterforts and wing walls must be set out with precision; the principal objects to be obtained first, are the longitudinal and transverse centre lines, and the greater the magnitude of the work, the more important this is: take, for example, a viaduct; the centres of the piers and abutments should be got in a thorough straight line, by means of pegs driven in with a notch in the head, to receive a line stretched tightly across, and all distances should be measured by means of two ten feet rods, which should be perfectly straight, one being moved after the second has been placed in line with it; and all measurements for masonry, brickwork, &c., should be taken twice *at least*; pegs should be driven to mark the direction of these measured lines, and they should be outside the works, that they may be preserved until the brickwork or masonry is set out; by straining a line tight over these pegs, the areas to be excavated may be easily nicked out.

Tools used in Setting Out.—Rods of ten and even twenty feet are far preferable to tapes in setting out, and in many cases a good 100 feet chain may be very advantageously used; the longitudinal and transverse lines marked out by these pegs, should alone be resorted to in setting out footings and walls. Besides the means above mentioned, we have the *line pins*, for stretching a line along a wall for keeping the courses of brickwork or masonry straight; the *large square* for setting out returns at right angles to the faces; *the level* for keeping the courses horizontal, which should be carefully looked to; a *templet* for measuring the header and stretcher; a mould to form bricks that are to be tapered; a square for trying the bedding of bricks, rubbing and bedding stones for rubbing cut bricks, and ascertaining their evenness of surface, &c."

Dressing of Stone.—"Whether granite, Portland, Bath, or sandstone, be used in construction, the dressing of the stone is a most important feature, and the larger the blocks used, the greater is the care required in levelling the beds and squaring the angles; if the beds are irregular, the bearing is unequal, and the stone tends to split and rend at bearing points, which act as fulcrums, but this cannot occur if the beds bear equally on their connecting surfaces. Unsightliness in appearance is the least consequence to be apprehended from such accidents; unequal settlement is far more dangerous, independently of the rent receiving rainwater and allowing it to lodge, exposing the structure in a dangerous manner to the effects of inclemency and change of temperature. If the blocks of stone be dressed with any degree of care, the trouble of laying them will be comparatively slight; care, however, must be taken that the layer of mortar exceed not ¼ of an inch in thickness, and that in order to disguise a thick or clumsy joint, the blocks be not made to lean forward on their edges, as they would then infallibly splinter from the greater part of the weight bearing on the angle. To disguise slovenly dressing of the blocks, and to level them when laid, workmen are very apt to underpin them with wedges of wood or splinters of stone, thereby laying the foundation of rents and fissures when the work settles."

Execution of Brickwork.—"Amongst the evils of omission or commission which we have to guard against in brickwork, the following may be enumerated:—the beds of mortar being very unequal in thickness, and exceeding ½ of an inch; the introduction of bats or pieces of brick, except as closers, whereby the perpendicular joints in two courses may lie one above the other, which should not be; the absence of mortar in the joints, particularly in the interior part of the work, and neglecting to grout with fine mortar *at least* every fourth course; running up too great a height and too little width of work at a time, thereby injuring the connection of the courses by unequal settlement, and the neglect in dry weather of wetting the bricks before they are laid on the mortar, when if a brick thus laid be lifted up again, it will be found that the mortar does not in the least adhere to it; each brick, as it is laid, should be pressed into the mortar; the levelling of the courses should be attended to; in arch work, where the bricks should be cut, this precaution is often totally neglected, and so much so, that we have more than once seen joints, where the work was partially concealed, of one inch in thickness; in such cases, unless the mortar be of *very rare* quality, the consequences in a short time may be easily foreseen. All these evils bricklayers will introduce unless closely watched, and their work occasionally ripped up; and although each evil by itself may appear of trifling moment, it is only by avoiding one and all that good brickwork, as rare in modern construction as it is sound and deservedly admired when met with, can be built."

Correspondence.

TREATMENT OF CONTRACTORS.

SIR,—I perceive an account in a late number of one of the numerous cases of tyrannical proceedings so frequently taken against contractors, though rarely to such an extent as therein mentioned in the case of Mr. Burton.* It is a cause of the deepest regret, that such a body of men as builders, through want of a good and friendly feeling, should attempt as they do to outvie one another in submitting so readily to the clauses which are now almost universally introduced in building contracts, whether they be of large or small amount, and whereby almost certain ruin will follow to the unfortunate contractor, should he displease or resist the views of the architect, or his agent the clerk of the works. When we read of such a clause as the following, which is rarely ever omitted being inserted:—"The works to be done to the satisfaction of the architect, and in all cases his decision shall be final and binding between the parties, and no payment shall be made at any time without his certifying all that has been done is to his satisfaction;"—and find men readily acquiescing, can we wonder at the disastrous results which so frequently follow? Is it reasonable that a builder should be called upon to find two securities for the performance of a contract, and thereby be put to the annoyance of soliciting his friends for that purpose, when much in value must be immediately placed on the works, and continue to be placed there, before he can receive a payment? It is a well known fact, that evils of a most serious nature are now existing, and will continue to exist, caused through the spirit of competition, now so rampant, which threatens to undermine all that is genuine as regards trade, and to instil principles of the blackest dye. The building trade is now reduced to a deplorable condition; insolvency in it is almost general; in reality, and until some decided and unanimous steps are taken for its benefit, there is but little hope of healthiness being restored. In order to accomplish this purpose (and in my opinion it only wants a commencement), I would propose the immediate formation of a society of master builders, inviting all, from the highest to the lowest, to come forward and join it, and frame such rules as would tend to the improvement of the trade, to which all should be invited, in order to carry out its intentions.

I shall feel favoured by the insertion of the above within your pages, which now circulate, I believe, in the hands of nearly all engaged in the building trades, through this and every other metropolis.—I am, Sir, &c.,

September 26th, 1847. WALTER.

UPRIGHT WALLS IN SEA—ORIENTATION.

SIR,—It is a pity that your correspondent, W. H. S., while standing upon the mural mole at Civita Vecchia, did not add to his "personal knowledge" the fact, that the Mediterranean is not a tidal sea,—a fact which enabled the ancients to build not only bridges and perpendicular moles, but, in more sheltered spots, houses projecting into the sea. Those who have seen the difference between a Mediterranean storm and an Atlantic one, will at once recognise the truth of Sir H. Douglas's declaration.

While on the subject of Italy, I would corroborate the statement of Mr. T. L. Donaldson concerning the orientation of churches there. It is plain that it is a thing totally uncared for by Roman Catholics abroad. It seems to me that we derived the custom (together with the way in which the ancient British Church kept Easter, &c.) from the eastern churches.

I am, Sir, &c., PEDESTRIAN.

* See page 464, ante.

ORIENTATION OF CHURCHES.

SIR,—In your journal of this week I notice an article in which the writer endeavours to prove that it is not necessary, in the erection of new churches, to adhere to the invariable practice of the English branch of the holy Catholic church, and place the building east and west. To strengthen his position, numerous *foreign* examples are cited, and recourse is had to several writings on the subject, the most important of all, however, being singularly overlooked.

"The priest standing at the *north side* of the table, shall say the Lord's prayer."

Our Book of Common Prayer settles the matter; if the priest is to comply with the rubric, our churches *must* be placed east and west.—I am, Sir, &c., CHURCHMAN.

London, Oct. 4th.

Miscellanea.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The first meeting of another session was held on the 8th inst., Mr. Pettigrew in the chair. A long list of new associates was read. A paper on earthworks at Amwell was read by the Rev. S. Isaacson. Mr. Whitesaid he considered he had established the Barrowfield to be a beacon hill, having cut through its centre 10 feet, and extended the trench 30 feet. He had opened several hundreds in his time, and was confident he was right.—A paper by Mr. C. R. Smith, on the discovery of Saxon remains at Northfleet, was then read. Sepulchral remains had of late been frequently found in the railway excavations in Kent, though such cuttings had not proved so useful or important to archæology as they might have been, from the absence of parties interested in them at the moment of discovery. He had therefore gone down himself, and had succeeded in obtaining several urns with human bones, iron shields, spear-heads, swords, &c. There were Roman urns and Saxon together, so as to shew that the Saxons had followed the Roman example, and used their burial-places.—Some remarks on early painting in oil were then read by Mr. Fairholt, in which reference was made to Mr. Eastlake's work and to Mr. Hendrie's translation of Theophilus, in order to shew the antiquity of the practice. Copies of several early paintings, from an ancient charter-chest, were exhibited, as probably the work of monastic artists, as early as the end of the 13th or beginning of the 14th century. At the close of the remarks a caution was given against the liability of antiquaries to carry every thing back to eras too remote, and thereby to overlook those to whom the real merit of bringing forward such discoveries as that of oil-painting was due.

KENT AND SURREY COURT OF SEWERS.—A court of the Commissioners of Sewers for Kent and Surrey was held on Thursday, at the Sessions-house, Newington: Mr. Nottidge in the chair. The surveyor of the South-Western Railway Company attended the court, and obtained permission, on behalf of that company, for the diversion of the sewer in York-road, to which point that railway will be shortly extended, and a spacious terminus, with all necessary offices, will be erected thereon. The surveyor also received permission, on the part of the company, to arch over 230 feet of open sewer in Vine-street, Waterloo-road, forming part of the line of the continuation of this railway to London-bridge. The court then proceeded to open the tenders sent in for making 2,050 feet of sewer in the Kent-road, which were as under:—Dethick, 2,905*l.*; Little, 2,580*l.*; Munday, 2,436*l.*; Bennett, 2,347*l.* 10*s.*; B. Wells (accepted), 2,281*l.*

COMPETITION.—A premium of one hundred guineas is offered for the approved plans for the erection of a workhouse for 600 persons at Aylsham, or the usual commission in its erection.

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